

A Brief History of SAS®, From a User's Perspective

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ABSTRACT

This paper shares the experiences of the author as a SAS® user, administrator, and advocate beginning in the 1970's. The purpose of the paper is to convey to current users how SAS developed and evolved from a user's perspective. While the story of SAS, the company, is quite interesting and informative, the focus here is on the software product itself and some of the applications that were developed over the years. In that context, maybe users of today can better understand how to position SAS in their careers

INTRODUCTION

It has been fifty years since SAS® Software was first offered as a product. It's important to examine how the software could be used in a career over time, and how both the software and the programmer evolved over that period.

MY FIRST SAS PROGRAM

My journey with SAS began a long time ago. I was a graduate student and taking a Microeconomics course. An assignment in the course was to model the price-quantity relationship of some particular good. The commodity that I chose was soybeans, as I recall. So, the task was to fit a demand curve to price quantity data for soybeans. I was given some instructions on how to set up a deck of cards to perform the linear regression on a mainframe. The University was running an IBM System 360 at that time. I distinctly remember setting up the PROC REG code to generate the analysis. Most computer outputs in those days were printed on the continuous feed green-bar paper that was prevalent then. I don't remember much about the results of the analysis, but I do remember seeing "North Carolina State University" printed on the header page. Most likely, I was running my analysis using SAS version 72, which was the first formal release of the SAS System. In the early days of SAS, versions were named based on the year of their release (Aster 2016). SAS version 72 included many of the most SAS-like features that are still in use today, including the DATA Step, and some of the most often-used procedures.

SAS SOFTWARE REVISITED

After that assignment, I did not use SAS again for over a decade. In 1975, I began working for South Central Bell Telephone Company, one of the operating telephone companies in the American Telephone & Telegraph Company system. It was there that I was introduced to UNIX, the operating system that was destined to become ubiquitous around the world. But, in that era, it was little known outside of the Bell System. In addition to UNIX, there was an underlying programming language called "C" by the developers at Bell Labs. It, too, would become one of the most important developments in the history of computing technology.

After several years of writing UNIX shell scripts and toying with some prototypes of document production systems, I transferred over to work in a group that was basically constructing econometric models of telephone usage. The work was important in the telephone rate-making process in that it was necessary to demonstrate to the regulatory agencies that telephone service rates were somewhat elastic. Therefore, rate changes would have to be adjusted to allow revenue to be sufficient to produce the target rate-of-return. These issues were often raised in Public Service Commission hearings, and it was important to be able to model the price – quantity relationship. At that time, we were using

various statistical computing packages, anything that we could find that would meet with the approval of the state PSC. But, as time passed, we employed more professional econometricians. They brought more tools, including SAS, to use in the modeling process. At that point, we had not arrived at the era of PC's and minicomputers. We were still punching cards and taking card decks to the window in the computer department. We were probably running SAS Version 82. It was after Version 82 that the numbering scheme changed and subsequent versions were numbered consecutively, and SAS Version 4 was introduced (Aster 2016).

I have to confess that I did not particularly like SAS at that point in time. I remember being frustrated because I didn't understand where the step boundaries were. However, after having seen some code written by the professional econometricians, I realized how the Data Step could create an output dataset that could then be an input to another Data Step or procedure. It was quite a revelation.

EVERYDAY SAS

As time passed, I moved into more general pricing work but continued to use SAS as a matter of choice. I eventually was assigned to support a project called Subscriber Line Usage Study (SLUS). The project involved collecting and analyzing telephone call records. It was useful in determining how calling differed between various classes and types of telephone service. In most respects, it was a data warehouse. However, calls records were only collected for a sample of the customers. In addition to projects like SLUS, we were beginning to process data on different platforms. We continued to use the mainframes, but also were getting into the era of personal computers. Somewhere along the way we were able to acquire a minicomputer, a Digital Equipment Corporation (DEC) VAX. Instead of punch cards, we were able to access SAS with the SAS Display Manager on a DEC VT100 terminal. Of course, many new versions of SAS were offered over that period. I don't recall ever using Version 4, but Version 5 was unforgettable.

VERSION 5

SAS Version 5 was more portable than previous versions, and it included many new features: the Macro Language, array subscripts, and the venerable SAS Display Manager (Aster 2016). The documentation for Version 5 was memorable too. The basic book in the documentation set was gigantic. It took up a lot of space on the bookshelf, and definitely was not very portable. A software feature that I recall was that you could call subroutines written and compiled in another language. I wrote a routine in C that would calculate airline mileage, a call rating element, given the V&H coordinates. I could call the routine from SAS, and it would return the calculated mileage. That functionality was taken out of Base SAS after Version 5. But, it was incorporated in a separate product in other versions. PROC FCMP provides a somewhat similar functionality in today's SAS.

VERSION 6

Version 5 was excellent, but it was written in Assembler, Fortran, and PL/1. It was obvious that SAS would need to be re-written in a language that would allow platform portability going forward. Sometime around the mid - 1980's, my company purchased an on-site course from SAS. The instructor, a SAS employee, shared with the class that some of the developers at SAS Institute came back from lunch one day to find a copy of Brian Kernighan and Dennis Ritchie's book "The C Programming Language". It was certainly a strong hint as to the future of SAS. It took nearly five years to completely re-write SAS in C. But, the Multi-Vendor Architecture that resulted was an important step for the software. Version 6 basically ruled the 90's. In that period, I ran many programs on Version 6.09 and Version 6.12. Many new features were introduced in Version 6 - SCL, engines, and support for SQL

(Aster 2016). It would not surprise me if there were some Version 6 implementations still running somewhere on the planet, if the licensing were to allow it.

VERSION 8

Version 7 was introduced in 1998, followed quickly by Version 8 in 1999. These versions included the Output Delivery System (ODS), which allowed programmers to control both Data Step and Procedure Step output to a large extent. That capability had always been on the wish list of many SAS programmers. I continued to use SAS Version 8 for several years. But, I began to hear about the promise of SAS Version 9, and I was hoping that I could continue working long enough to load up that version one day. SAS Version 9 was introduced in 2002.

VERSION 9

I had the pleasure of using SAS Version 9 for several more years at Bellsouth. I had transitioned away from the rich call record databases and worked with wholesale pricing and number resource management. But, I was able to keep my SAS licenses and was able to acquire a Windows Server license and a SAS license for it. It proved to be a good training vehicle and was particularly useful for running web services. On March 5, 2006, a merger of AT&T and Bellsouth was announced, and the merger was completed on December 29, 2006. I left the company in 2007 and joined Regions Bank as a SAS programmer in the Business Banking Department. There I found a thriving community of talented SAS programmers and learned so much from so many people. Most of our work was to provide reporting on small business loan applications and loans. It was at the bank that I learned how to use SAS Enterprise Guide®. I had seen the product demonstrated early on at SESUG 1998 at Norfolk. The keynote speech that year was entitled "The Future Interface to the SAS System for PC's". (SESUG98 1998) While the product seemed to offer a lot of promise, the early versions seemed cumbersome and hard to use at the time. I stuck with the SAS Display Manager as did many. However, at the Bank, SAS Enterprise Guide became familiar and comfortable.

ADVENTURES IN SAS ENTERPRISE BUSINESS INTELLIGENCE/GRID

After working at the bank for some time, I had another SAS challenge to face. The company acquired the licensing to deploy SAS Enterprise Business Intelligence®. I had to learn a number of new terms, concepts, and a host of new products. Even with some great training opportunities, the conversion process took some time. My final challenge though was the SAS Grid® installation and operation. The Grid really addressed one of the issues that had always interested me – obtaining the best throughput possible.

Now we have a whole concept to learn – SAS Viya® and cloud computing. Who knows what new functionality we will see in the coming years.

CONCLUSION

I believe that working with SAS over the years has been of great benefit to me personally. If I ever ran across a new buzzword, computing concept, or technology, I would often go and check out the item in a SAS context. It always seemed that SAS addressed just about all of those buzzwords, computing concepts, and technologies at some place in the product line. For example, when I first heard of XML, I was not sure what it was. I looked up XML in a SAS context, and it became apparent what it was and how it could be useful. It has been good that I have been able over the years to keep SAS in my toolkit.

REFERENCES

Aster, Rick. April 30, 2016. Versions & Environments. Accessed on September 14, 2022. <http://www.sas.com>

SESUG98. Registration Booklet. 1998. Accessed on September 14, 2022. <http://www.sas.com>

Wicklin, Rick. August 2, 2013. "The Do-Loop – How Old is Your Version of SAS". Accessed on September 14, 2022. <http://www.sas.com>

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